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Application No. 10/573,888

2

Docket No.: 80250(302741)

Amendment dated June 13, 2008

After Final Office Action of March 14, 2008

### AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended) An optical functional waveguide comprising:

- a substrate;
- a clad formed on said substrate;
- a core which is formed in said clad and serves as an optical path;
- a plurality of lens-shaped groove structures formed so as to align at a predetermined interval along the optical path and fragmentize the optical path and being filled with a material having a refractive index temperature coefficient different from that of said core; and
- a heater electrode interposed between said plurality of groove structures provided along the optical path for controlling temperature of said material.

Claim 2 (Canceled)

Claim 3 (Previously Presented) An optical functional waveguide according to claim 1, wherein at least one of the end faces of said plurality of groove structures is tilted from a position perpendicular to the optical path.

Claim 4 (Original) An optical modulator comprising the optical functional waveguide according to claim 1 and modulating amplitude or phase of light.

Claim 5 (Currently Amended) An arrayed waveguide grating comprising the optical functional waveguide according to claim [[2]] 1 in a slab waveguide.

Claim 6 (Currently Amended) A dispersion compensation circuit comprising the optical functional waveguide according to claim [[2]] 1 in the vicinity of a coupling portion that two arrayed waveguide gratings are coupled to each other in a cascade.

Claim 7 (Currently Amended) A dispersion compensation circuit comprising:  
a mirror provided in a waveguide and arranged in the vicinity of a spectrum plane; and

the optical functional waveguide according to claim [[2]] 1 arranged in the vicinity of said mirror.

Claim 8 (Canceled)

Claim 9 (Currently Amended) An optical functional waveguide according to claim [[2]] 1, wherein said groove structure is provided at a slab waveguide side of a coupling portion of the slab waveguide and a single mode waveguide.

Claim 10 (Canceled)

Claim 11 (Currently Amended) An optical functional waveguide comprising:  
a substrate;  
a clad formed on said substrate;  
a core which is formed in said clad and serves as an optical path;  
a plurality of wedge-shaped groove structures formed so as to align at a predetermined interval along the optical path and fragmentize the optical path and being filled with a material having a refractive index temperature coefficient different from that of said core; and

a heater electrode means interposed between said plurality of groove structures provided along the optical path for controlling temperature of said material.